DOCUMENT RESUME

ED 366 997 CS 508 450

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TITLE Exploring Group Communication and Productivity Improvement: Using an Experiential Process.
PUB DATE Nov 92
NOTE 10p.; Paper presented at the Annual Meeting of the Speech Communication Association (78th, Chicago, IL, October 29-November 1, 1992).
PUB TYPE Speeches/Conference Papers (150) -- Reports - Descriptive (141)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Class Activities; Communication Apprehension; Communication Research; Communication Skills; *Experiential Learning; *Group Dynamics; Higher Education; Organizational Communication; Productivity; Professional Education; Quality Circles; Simulation; *Small Group Instruction
IDENTIFIERS Communication Behavior; Communication Context; Communication Styles; Oklahoma State University

ABSTRACT

Engineering students at Oklahoma State University used an experiential process (the ACME Basket Exercise) to develop an understanding of how quality and productivity can be improved. The exercise simulates a traditional production organization in the classroom and mirrors the efforts, the successes, and the frustrations of individuals and work groups as they attempt to produce a quality product in a productive manner. Following an initial production run, with a large group, students are assigned the task of improving production. Based on student suggestions, an array of methods and techniques are presented and discussed over time. The students use this information as they redesign the ACME Basket production process. Group communication management, product and process design, quality and productivity improvement, and group processes are explored. The experiential process culminates with a second production run where the students have the opportunity to apply their new group communication understanding and design. In this experiential exercise, there is opportunity also for different kinds of research. Based on students' scores on several instruments, some groups were formed with just one communication style and a high or low level of communication apprehension and others with a mixed communication style and mixed levels of communication apprehension. The experiential process can be restructured to match on the job requirements and allow production and engineering teams to focus on quality, design and project planning issues, and the group communication process. (RS)

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ED 366 997

EXPLORING GROUP COMMUNICATION AND PRODUCTIVITY IMPROVEMENT: USING AN EXPERIENTIAL PROCESS

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78th Annual Speech Communication Association Convention
Chicago, Illinois - 1992

Commission on Experiential Learning in Communication

CS508450

An experiential process for exploring the group communication interactions of management and technology, is explored in this study. The process is presented in terms of a training agenda utilized during a university course in human performance, conducted in an industrial engineering class. A structured experience provides the inductive basis for establishing the learning process. Described is the training agenda and its relationship to the group communication process, to learning theory, to the integration of the structured experience with the training agenda and to the learning outcomes generated. The exercise involves the construction of a product using paper as the material and employing simple office tools. The results of an understanding of the communication process in this experiential process, with resulting productivity, have shown positive effects in the university setting. Implementation of this experiential process in industrial settings, for the improvement of group communication for productivity management, promises to be similarly effective.

INTRODUCTION

A learning event focused on a single managerial process effecting group communication for productivity may lead to an improved understanding of that process. A production based structured experience with measured outcomes can provide the basis for exploring the integration of several managerial processes. When the single learning events are presented within the structured experience, as required by the participants, a powerful experiential process is the result (Foxen, 1990). Such an experiential process enhances understanding of communication and workplace interactions.

Engineering students at Oklahoma State University have used such an experiential process to develop an understanding of how quality and productivity may be improved. The ACME Basket Exercise structured experience (Pasmore and Sherwood, 1981) simulates a traditional production organization in the classroom. The experience mirrors the efforts, the successes and the frustrations of individuals and work groups as they attempt to produce a quality product in a productive manner.

Following an initial production run, with a large group, the students are assigned the task of improving production. Effective problem solving and decision making is effected by the communication interaction and the procedural matters.

Based on student suggestions, an array of methods and techniques are presented and discussed over time. The students utilize this information as they redesign the ACME

Basket production process. Generally, the total training experience explores group communication management, product and process design, quality and productivity improvement, and group processes. The experiential process culminates with a second production run where the students have the opportunity to apply their new group communication understanding and design. This study covers the development of the experiential process and describes some implications for management training in organizations.

RATIONALE

Training experiences are more successful in changing an individual's understanding and behavior when the exercises resemble real life situations. Most traditional management training falls short of being effective for the following reasons: (1) the training is in the form of reading or lecture which is not readily applicable; (2) the individuals may have no work experience and, therefore, cannot visualize the application of the method in the work place; (3) the training focuses on only one improvement method, while the most effective processes for improvement requires the integration of a number of methods.

Management knowledge and behavioral changes proceed in a cycle. Existing knowledge, coupled with new knowledge about management improvement strategies or methodologies, generates awareness of possible opportunities. This is particularly true when the new knowledge is sought as the result of an experience based on outcomes from personal job related behaviors. These opportunities are evaluated, and behavioral changes are attempted. If feedback on the changes is assessed as positive, permanent change occurs, and the cycle repeats. Understanding and behavioral change will not happen when: (1) the job does not exist; (2) the risks associated with change are high; (3) negative feedback occurs immediately.

Group activities, which produce a product, provide a training opportunity that closely emulates an actual job in a low risk setting. When the activity is properly designed, it will provide a positive experience. New knowledge, which can be applied on the job, occurs when the individuals: (1) engage in the activity; (2) critically evaluate the activity; (3) abstract some useful insight; (4) generalize the experience; (5) apply the generalization in later work (Pfeiffer and Jones, 1983). It is important to note before and after behavior and communication of individuals in group experiential learning.

Experiencing, or "doing the activity," allows individuals to gather data. If the process stops here, later application

is left to chance. When the facilitator of the activity provides the opportunity for the remaining process steps in the cycle to occur, then more accurate and generalized knowledge results. It is important to recognize that learning through experiencing is highly contingent on the individuals' existing experiences and knowledge. In order for individuals to gain an accurate understanding of the implications of an experience, they must share the experience with others in group communication opportunities. This experiential exercise involved task-achievement functions.

In "doing" the ACME Basket Exercise, experience and knowledge is provided to the participants. This existing data is used as the basis of the criteria and measures used in evaluating subsequent steps in the experiential process. Discussion of the experience, with the total group, explores how individual feelings, group processes, engineered design and management methods interact. The discussion of the interaction is where the most useful learning occurs, as it explores the dynamics of the situation. It is these very dynamics that are the most difficult to portray in other types of knowledge transfer. The act of generalizing allows the students to abstract the experience into principles that can be applied in the real world work experience. Generalizing occurs in the experiential process portrayed here when individual training on selected processes is implemented.

Applying, the final step, requires putting the principles and group communication processes to use as in the redesigned production run. Such application, and its discussion, increases the probability that the principles discussed will be fully understood, and appropriately applied by the students.

EXPERIENTIAL PROCESS

A sociotechnical design course, human performance, at Oklahoma State University, includes the use of the experiential process. The process utilizes the ACME basket production process as an initiating experience upon which later class discussion and a redesign project can be based.

The process, as applied consists of three stages. First, an initial production run is made early in the semester. Second, a redesign phase, which lasts throughout the semester, provides a period of exploration during which specific managerial processes and techniques are presented and discussed. Finally, a second production run is made near the end of the semester. The participants work in their small groups and in the larger group for discussions.

The Acme Basket Exercise production process, as an experiential exercise, involves the construction of a paper basket. The product is manufactured from paper, using simple office tools in the production process. Basket production is set in a traditional organization, where work design principles include hierarchy of authority and work simplification. The students act as employees of the organization. The student employees are assigned to one of several positions: Supervisor (1 individual), Clerk (1), Material Handler (1), Maintenance Technician (1), Inspector (3), Cutter (6-10), or Stapler (6-10). The cutter and stapler positions are balanced in number. Students are assigned as Consultants to review the process and report back to the organization. With classes of more than 30 students, some students are asked to observe.

Each student is given time to read: (1) a description of the ACME Basket organization and (2) their own job in the organization. The organizational description explains that the mission of ACME is to produce a special paper basket to be used by ACME for inter plant material handling. It also describes the organizations structure, a traditional one with a supervisor, two task based departments (cutting and stapling), inspectors for quality control and functional support departments.

The goals of being quality conscious and productive are presented, and each student is requested to be aware of personal reactions and communication interactions while acting naturally in their prescribed role. The job description explains their role in the organization and provides process instructions and product design information. The materials and equipment, required by each employee, are already positioned: paper, pencils, rulers, scissors, staplers, and record keeping forms. The organization is then given 20 minutes to produce as many quality paper baskets as possible.

This exercise has been repeated in seven human performance classes over the last six years. The results of the exercise are consistently the same. They include: (1) initial production of a maximum of three baskets, all rejected for poor quality; (2) frustration - one group of inspectors went on strike - requesting more responsibility and improved working conditions; (3) learning about the problems involved in operating even a simple organization; (4) problems with group communication in the beginning of the exercises and improvement in group communication during the final exercise.

During the discussions which followed the experience, students who have worked generally state that they have had similar experiences in real work situations. This leads to a

comparison of the problems and the opportunities in the experience and at work. Out of this discussion, the impetus and direction is set by the class for learning about methods of group communication processes, quality management and performance improvement.

The second stage starts with the students being assigned to a team consisting of four to six individuals. Each team's goal is to efficiently produce a high quality product near the end of the course sequence. The students are also assigned the responsibility of preparing three reports.

The teams are responsible for two of the reports. The first report describes the product and the process changes that result in the specified changes. The second report describes the group processes and the changes in the group which occurred during the team's redesign meetings. Each student is individually responsible for the third report, a diary of personal perceptions and feelings about the redesign meetings, with comments about group communication process. Developing these reports provide the team members an opportunity to internalize, through self feedback, group communication process changes, the process knowledge and behavioral changes experienced during the redesign process.

At this point in the semester, the direction that the education of the group will take has been determined but not the exact agenda. Discussions of a variety of issues focused on and related to both quality and productivity management must be explored. The instructor must be able to act as both teacher and facilitator, providing guidance, support and knowledge (Kolb, Lublin, Spoth, and Baker, 1986).

The group sessions in class are used to present and to discuss issues relevant to the stages of the product and the process design that the students are experiencing in their redesign project. Issues discussed in the past have included: quality management, job satisfaction, motivation, job design, product design, group communication process, and creativity. Methodologies, which could be discussed, include: value engineering, sociotechnical work design, work simplification, work measurement, human factors, leadership, job enrichment and training. The important consideration in the selection of topics is that the learning objectives dictate the issues and that student needs dictate the timing of the presentation.

During this period, the student teams redesign the ACME Basket Exercise processes, striving to achieve the stated goals. The redesign process culminates in a second 20 minute production run that is used by the team to demonstrate its solution. The outcomes of this exercise include: (1) drastically improved performance (one team of five individuals

produced over 800 units); (2) mixed levels of individual frustration and joy (depending on comparative group performance); (3) an improved group communication process; (4) a generally heightened sense of understanding about how performance can be improved.

The range and level of learning accomplished becomes apparent in the discussions and the reports that are presented after the second production period. Many students described how they have used the knowledge in improving the group communication process in other classes. Students also indicated an improved understanding of why specific procedures are used at their place of work and how those methods could be improved.

DISCUSSION

The first use of this experience included only the initial production run. Student inferences were expected to be built on only that one experience. Relatively poor results were achieved: little discussion and generalization occurred, and what did occur focused on problems. When the redesign process was added, the discussion began to focus on solutions to problems, group communication process and behavioral issues.

A major improvement in production goal attainment and in the learning process occurred when discussion of quality management and product and production process design methodologies was introduced. As in the production process, the learning process can benefit from the integration of a variety of methods in the discussion. Further improvement occurred by moving from a regimented learning agenda to involving the students in the selection of topics.

In this experiential exercise, there is opportunity also for different kinds of research. For example, in the human performance class, in the Spring of 1992, the groups were manipulated, based on several instruments, for the second run of this exercise. The first instrument assessed individual communication style, and the second instrument assessed individual communication apprehension. Based on student scores, some groups were formed with just one communication style and a high or low level of communication apprehension and others with mixed communication style and mixed levels of communication apprehension.

For the first time since this exercise was initiated in the human performance class, the students elected not to remain in their groups for the second exercise, but to perform the second exercise as a whole class. Following the second

exercise, two other instruments were used for research purposes. Findings from this group manipulation will be studied further. This experiential exercise has limitless research possibilities for classroom and industrial settings.

The instruments used in the Spring of 1992 were: (1) Communication Style (Drake, 1991), (2) Personal Report of Communication Apprehension, PRCA-24 (McCroskey, 1970, 1982), (3) Work Group Effectiveness Inventory (Burns & Gragg, 1981), (4) Learning Group Process Scale (Burns & Gragg, 1981).

IMPLICATIONS FOR INDUSTRIAL MANAGEMENT TRAINING

The one step missing for most of the students in college is the ability to apply what they have learned in the real world. An improved setting for this method of instruction would be in an existing work group which focuses on the group communication process. The experiential process would allow groups to experiment with new techniques and behaviors in a low risk setting. The new knowledge and behaviors could then be then be utilized by the group on the job as appropriate applications arose. Organizations are now committing to using experiential learning (Foxen, 1990). Effective communication can help industry with its productivity problems.

A major change in the presentation would be to structure the experiential process to match the group's on the job requirements. This restructuring would depend on the groups level of expertise and should improve the to the job transfer rate. The experiential process described here could be used by production and engineering teams to focus on quality, design and project planning issues and the group communication process. It could also be used in the development of production teams to focus on the sociotechnical issues inherent to quality or efficiency improvement.

A major outstanding challenge is the redesign of the experience to explore multifunctional issues simultaneously. Such an approach would allow working with multiple teams spanning quality management, engineering and production. Achievement of this goal would allow organizations to explore technological and social change management in a training setting for the future.

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